

AM-89-417

Crystal structure of pahasapaite, a beryllorphosphate mineral with a distorted  
zeolite rho framework

Roland C. Rouse, Donald R. Peacor, Stefano Merlino

For deposit: Table 2

American Mineralogist, 74, 9-10, 1195-1202.

PP 1-10

TABLE 2. OBSERVED AND CALCULATED STRUCTURE FACTORS IN PAHASAPAITE.

H	K	L	FO	FC	A	B	PHI	DEL(F)	SIG*(F)
0	0	4	150.42	148.15	-148.15	-0.24	180.09	2.27	0.19
0	0	6	249.59	248.10	-248.10	-0.60	180.14	1.49	0.22
0	0	8	218.15	216.23	216.23	0.84	0.22	1.92	0.27
0	0	10	86.25	88.38	88.38	-0.31	359.80	-2.13	0.32
0	0	12	226.54	223.50	-223.50	-1.43	180.37	3.04	0.35
0	0	14	41.61	39.58	39.58	0.52	0.75	2.03	0.50
1	0	5	33.70	31.97	31.97	0.20	0.37	1.73	0.27
1	0	7	81.45	83.15	-83.15	-0.70	180.48	-1.70	0.27
1	0	9	96.09	96.34	-96.33	-1.19	180.71	-0.25	0.29
1	0	11	86.22	81.52	81.51	1.07	0.75	4.70	0.35
1	0	13	43.99	45.30	45.30	0.04	0.06	-1.31	0.46
1	0	15	31.88	28.49	-28.49	-0.32	180.64	3.39	0.60
1	0	17	28.71	28.16	-28.16	-0.50	181.01	0.55	0.73
2	0	4	36.75	29.93	29.93	-0.34	359.35	6.82	0.22
2	0	6	124.52	124.17	124.16	1.03	0.47	0.36	0.23
2	0	8	105.08	106.07	106.06	1.14	0.62	-0.98	0.24
2	0	10	28.44	26.41	-26.40	-0.50	181.08	2.03	0.39
2	0	12	68.80	66.95	-66.93	-1.30	181.11	1.86	0.34
2	0	16	25.23	23.98	23.97	0.24	0.58	1.26	0.73
0	3	3	36.73	29.12	-29.11	0.97	178.09	7.61	0.20
3	0	5	94.07	96.85	96.84	1.38	0.82	-2.78	0.22
3	0	7	75.57	74.53	-74.52	-0.49	180.37	1.04	0.26
3	0	9	71.63	68.32	68.32	0.34	0.29	3.31	0.29
3	0	11	46.73	49.93	-49.93	-0.75	180.86	-3.21	0.36
3	0	13	9.35	12.31	-12.30	-0.45	182.09	-2.96	1.31
3	0	15	45.72	37.60	-37.59	-0.96	181.46	8.11	0.45
0	2	4	206.55	204.54	204.54	0.91	0.26	2.01	0.19
0	4	4	7.43	16.80	-16.77	-0.89	183.05	-9.37	0.75
4	0	6	12.34	8.78	-8.78	-0.15	180.99	3.56	0.63
4	0	8	79.61	78.45	-78.45	-0.70	180.51	1.15	0.29
4	0	12	120.23	120.82	120.81	1.02	0.48	-0.59	0.34
4	0	14	10.02	11.06	-11.06	0.08	179.56	-1.04	1.37
4	0	16	13.20	13.65	13.65	0.36	1.52	-0.46	1.27
0	1	5	171.55	172.38	172.37	1.37	0.46	-0.82	0.21
0	3	5	26.52	24.50	24.50	0.14	0.32	2.02	0.31
0	5	5	166.10	163.09	163.09	0.21	0.07	3.01	0.22
5	0	7	163.52	161.78	-161.78	-0.80	180.28	1.74	0.28
5	0	9	19.85	15.95	15.94	0.59	2.13	3.89	0.55
5	0	11	86.32	86.93	-86.92	-0.66	180.43	-0.61	0.35
5	0	13	39.59	41.87	41.87	0.29	0.40	-2.29	0.46
5	0	15	8.03	14.95	14.95	-0.01	359.97	-6.92	1.83
5	0	17	37.60	33.65	-33.65	0.03	179.96	3.95	0.64
0	2	6	55.44	53.52	53.52	0.31	0.33	1.92	0.26
0	4	6	116.99	114.77	114.76	1.05	0.53	2.22	0.26
0	6	6	120.53	121.84	121.84	0.64	0.30	-1.31	0.26
6	0	8	55.06	55.79	-55.79	-0.37	180.38	-0.73	0.30
6	0	10	15.78	17.94	-17.94	-0.33	181.05	-2.16	0.73
6	0	12	39.75	43.18	43.18	0.09	0.12	-3.43	0.46
6	0	14	12.24	10.45	-10.44	-0.41	182.26	1.80	1.16
6	0	16	37.70	29.76	-29.75	-0.66	181.28	7.94	0.60
0	1	7	87.09	88.02	-88.01	-0.59	180.39	-0.92	0.26
0	3	7	52.18	52.25	-52.25	-0.62	180.68	-0.07	0.28
0	5	7	132.95	131.95	-131.95	-0.58	180.25	1.00	0.28
0	7	7	189.75	190.10	190.09	1.53	0.46	-0.35	0.27
7	0	9	23.92	21.13	21.13	0.26	0.72	2.79	0.52

7	0	11	17.44	22.95	22.95	-0.09	359.77	-5.50	0.78
7	0	13	113.70	111.90	-111.89	-1.18	180.60	1.80	0.39
7	0	15	27.99	26.20	26.19	0.42	0.91	1.80	0.67
0	2	8	17.57	21.33	-21.33	-0.20	180.53	-3.76	0.48
0	4	8	19.63	22.64	22.60	1.30	3.30	-3.01	0.48
0	6	8	40.60	40.19	-40.18	-0.33	180.47	0.41	0.34
0	8	8	23.70	21.94	21.94	-0.23	359.40	1.76	0.52
8	0	10	36.14	41.45	41.45	0.27	0.37	-5.31	0.45
8	0	12	43.09	39.64	-39.64	0.04	179.94	3.45	0.49
8	0	14	36.36	36.62	36.62	0.37	0.58	-0.25	0.58
0	3	9	57.65	52.59	52.59	0.01	0.01	5.06	0.30
0	5	9	44.20	69.28	-69.27	-1.10	180.91	-25.08	1.29
0	7	9	30.83	27.49	27.49	0.17	0.35	3.34	0.44
0	9	9	74.43	79.65	-79.65	-0.64	180.46	-5.22	0.35
9	0	11	49.28	51.09	51.08	0.61	0.68	-1.81	0.43
9	0	13	35.68	38.00	38.00	0.25	0.37	-2.33	0.58
9	0	15	37.00	37.26	37.25	0.66	1.02	-0.26	0.63
0	4	10	30.07	32.56	32.56	-0.03	359.94	-2.49	0.42
0	6	10	9.78	10.38	-10.38	-0.27	181.49	-0.60	1.13
0	10	10	13.66	12.73	12.72	0.37	1.66	0.93	0.96
10	0	12	18.64	17.91	-17.91	0.14	179.55	0.73	0.81
0	1	11	11.86	7.47	-7.46	-0.40	183.03	4.39	1.04
0	3	11	38.08	37.22	-37.22	-0.17	180.26	0.86	0.41
0	5	11	23.43	18.82	18.79	1.04	3.18	4.61	0.56
0	7	11	50.16	50.40	50.40	0.42	0.48	-0.24	0.42
0	9	11	56.00	56.16	56.16	0.44	0.44	-0.16	0.41
0	11	11	21.44	20.60	-20.59	-0.54	181.51	0.84	0.72
11	0	13	35.89	34.18	-34.18	-0.03	180.04	1.71	0.55
0	2	12	35.81	38.80	38.80	0.22	0.32	-2.99	0.43
0	4	12	20.73	20.69	-20.67	-0.86	182.38	0.04	0.63
0	6	12	62.47	63.43	63.43	0.41	0.37	-0.97	0.41
0	8	12	13.81	11.78	11.78	0.40	1.96	2.03	1.06
0	10	12	30.76	30.70	-30.70	0.15	179.71	0.06	0.56
0	12	12	54.76	50.85	50.85	-0.02	359.98	3.91	0.46
0	1	13	9.55	14.79	14.79	-0.01	359.98	-5.24	1.42
0	5	13	45.75	47.46	47.46	0.31	0.38	-1.70	0.44
0	7	13	99.12	98.48	-98.47	-1.00	180.58	0.64	0.39
0	9	13	8.53	2.03	-2.02	0.09	177.39	6.50	2.27
0	2	14	35.63	34.73	34.73	0.37	0.61	0.90	0.46
0	4	14	35.82	39.09	-39.08	-0.48	180.71	-3.27	0.50
0	6	14	38.72	38.92	-38.92	-0.52	180.76	-0.20	0.52
0	8	14	19.87	20.22	20.22	0.09	0.26	-0.35	0.88
0	10	14	12.19	8.44	8.43	0.26	1.76	3.75	1.38
0	1	15	22.62	15.11	-15.09	-0.75	182.84	7.51	0.74
0	3	15	7.03	16.15	16.15	-0.10	359.65	-9.12	2.24
0	7	15	53.84	48.80	48.80	0.65	0.76	5.04	0.50
0	9	15	16.09	17.43	-17.42	-0.41	181.33	-1.34	1.11
0	2	16	46.38	43.99	-43.98	-0.98	181.28	2.39	0.53
0	4	16	23.72	24.91	24.90	0.67	1.53	-1.18	0.79
0	6	16	23.90	26.48	26.47	0.21	0.45	-2.58	0.82
0	5	17	68.79	63.23	-63.22	-0.85	180.77	5.56	0.51
1	1	4	201.32	203.33	-201.03	30.52	171.37	-2.01	0.19
1	1	6	123.80	115.57	2.95	-115.54	271.46	8.23	0.22
1	1	8	99.80	99.72	45.44	-88.76	297.11	0.09	0.28
1	1	10	85.62	80.95	-25.29	-76.90	251.80	4.67	0.31
1	1	12	22.95	24.90	24.78	2.45	5.65	-1.96	0.60
1	1	14	41.35	45.51	-35.22	28.82	140.71	-4.16	0.50
1	1	16	56.31	47.20	42.80	19.90	24.94	9.12	0.51
2	1	5	92.05	93.54	-71.47	-60.35	220.18	-1.49	0.21
2	1	7	49.20	49.15	-48.78	-6.02	187.03	0.05	0.27

2	1	9	53.71	52.99	27.10	45.53	59.24	0.73	0.29
2	1	11	58.59	56.98	34.09	45.65	53.25	1.61	0.32
2	1	13	37.18	37.41	18.54	-32.49	299.71	-0.24	0.43
2	1	15	42.47	41.43	-2.98	-41.33	265.88	1.03	0.45
2	1	17	31.87	31.34	4.14	31.07	82.41	0.53	0.70
3	1	4	69.48	69.98	44.78	-53.78	309.78	-0.50	0.20
3	1	6	21.54	22.41	-22.41	-0.28	180.70	-0.87	0.38
3	1	8	31.59	29.06	-9.47	27.47	109.02	2.53	0.35
3	1	10	25.81	25.58	-23.15	-10.88	205.16	0.23	0.45
3	1	12	33.91	35.24	-25.48	-24.34	223.68	-1.32	0.44
3	1	14	47.53	47.57	26.92	39.22	55.54	-0.05	0.42
3	1	16	39.81	35.31	-28.24	-21.20	216.90	4.50	0.58
1	3	4	88.81	83.86	83.63	6.26	4.28	4.95	0.19
4	1	5	90.04	92.58	-88.07	-28.55	197.96	-2.54	0.22
4	1	7	124.84	124.24	120.39	-30.69	345.70	0.60	0.27
4	1	9	134.95	138.06	-114.60	76.99	146.11	-3.11	0.28
4	1	11	81.58	81.17	58.08	56.71	44.32	0.41	0.34
4	1	13	30.94	26.60	-21.70	-15.38	215.33	4.34	0.50
4	1	15	48.27	46.61	26.51	-38.33	304.67	1.66	0.46
4	1	17	27.36	19.64	16.28	-10.98	326.00	7.72	0.75
1	2	5	80.36	83.56	-68.78	-47.44	214.59	-3.19	0.21
1	4	5	47.24	44.94	-38.16	23.75	148.10	2.29	0.24
5	1	6	8.87	8.73	6.06	-6.29	313.97	0.13	0.87
5	1	8	26.04	30.21	26.73	14.07	27.77	-4.16	0.43
5	1	10	68.92	68.28	23.25	-64.20	289.90	0.64	0.35
5	1	12	54.90	54.30	-51.89	15.97	162.90	0.60	0.39
5	1	14	24.87	25.05	-8.86	23.43	110.71	-0.17	0.62
5	1	16	14.48	14.10	-7.45	11.97	121.91	0.38	1.22
1	3	6	77.97	77.93	-24.08	-74.11	252.00	0.05	0.24
1	5	6	51.54	49.36	-47.81	-12.27	194.40	2.18	0.27
6	1	7	15.71	12.24	-10.47	-6.34	211.18	3.47	0.57
6	1	9	81.87	84.30	14.18	-83.10	279.69	-2.43	0.32
6	1	11	88.41	88.65	3.51	-88.58	272.27	-0.24	0.36
6	1	13	12.66	11.70	11.23	3.25	16.15	0.97	1.04
6	1	15	37.53	40.24	3.14	40.12	85.53	-2.70	0.55
1	2	7	29.62	29.53	28.11	-9.06	342.14	0.09	0.31
1	4	7	43.02	41.61	13.16	-39.48	288.43	1.41	0.30
1	6	7	26.27	24.88	-23.27	-8.82	200.75	1.38	0.39
7	1	8	70.66	71.35	-62.66	34.12	151.43	-0.69	0.30
7	1	10	40.81	39.82	-28.78	27.51	136.29	0.99	0.43
7	1	12	61.10	59.27	58.37	10.29	10.00	1.82	0.42
7	1	14	42.64	41.41	17.01	-37.76	294.25	1.23	0.51
1	3	8	73.08	72.64	-35.34	-63.46	240.89	0.45	0.27
1	5	8	87.24	88.38	88.38	-0.26	359.83	-1.13	0.30
1	7	8	79.69	82.78	-79.88	21.73	164.78	-3.09	0.30
8	1	9	61.17	56.36	55.76	-8.24	351.60	4.80	0.36
8	1	11	62.66	61.30	-58.97	-16.75	195.86	1.36	0.43
8	1	13	46.56	46.28	15.48	43.61	70.46	0.29	0.49
8	1	15	31.64	27.84	-27.75	2.27	175.33	3.79	0.64
1	2	9	106.98	105.30	34.23	99.58	71.03	1.68	0.27
1	4	9	64.82	62.77	-61.05	14.62	166.53	2.05	0.31
1	6	9	97.49	97.76	31.89	-92.41	289.04	-0.27	0.32
1	8	9	37.16	34.28	27.48	-20.49	323.29	2.89	0.41
9	1	10	63.21	63.68	-2.65	63.62	92.39	-0.47	0.38
9	1	12	11.28	12.42	-12.39	0.87	176.00	-1.14	1.25
9	1	14	67.18	64.69	-55.62	-33.03	210.70	2.49	0.48
1	3	10	54.02	53.19	-51.89	11.65	167.34	0.83	0.32
1	5	10	21.07	21.46	5.75	20.67	74.44	-0.39	0.55
1	7	10	58.39	57.28	-10.54	56.30	100.61	1.11	0.38
1	9	10	56.19	53.46	8.18	-52.83	278.81	2.73	0.38

10	1	11	64.55	58.62	-4.67	-58.44	265.43	5.93	0.41
10	1	13	26.78	27.29	1.85	27.23	86.11	-0.52	0.65
1	2	11	89.84	93.09	-34.57	86.44	111.80	-3.25	0.30
1	4	11	60.64	60.22	59.38	10.05	9.61	0.42	0.35
1	6	11	126.72	127.03	-45.91	-118.45	248.81	-0.32	0.35
1	8	11	58.58	56.86	-36.91	-43.26	229.53	1.71	0.42
1	10	11	14.32	15.66	9.32	12.59	53.48	-1.34	0.95
11	1	14	58.40	59.94	45.51	-39.01	319.40	-1.54	0.46
1	3	12	45.68	43.48	9.37	-42.46	282.44	2.20	0.39
1	5	12	62.28	62.41	-62.34	2.97	177.27	-0.13	0.39
1	7	12	33.15	30.36	28.66	10.01	19.24	2.79	0.52
1	9	12	38.53	39.35	-39.26	2.65	176.15	-0.82	0.48
1	11	12	24.80	25.78	13.97	21.67	57.20	-0.98	0.70
12	1	13	20.51	20.32	-19.76	4.73	166.54	0.19	0.87
1	2	13	50.20	52.72	-39.58	-34.83	221.35	-2.53	0.38
1	4	13	33.41	34.84	32.72	-11.96	339.93	-1.43	0.49
1	6	13	17.07	11.87	7.62	-9.11	309.91	5.20	0.82
1	8	13	32.27	35.59	19.88	29.52	56.04	-3.32	0.58
1	10	13	16.11	15.65	15.41	2.74	10.08	0.46	0.96
1	12	13	61.22	59.63	-59.12	7.78	172.51	1.59	0.48
1	3	14	9.59	10.40	0.37	10.39	87.97	-0.81	1.35
1	5	14	30.57	29.67	9.99	27.93	70.32	0.90	0.56
1	7	14	37.69	32.88	27.56	-17.92	326.96	4.81	0.53
1	9	14	24.51	21.55	-19.06	-10.06	207.84	2.96	0.74
1	11	14	23.24	21.14	-6.91	-19.98	250.92	2.09	0.77
1	2	15	26.94	26.95	19.12	-18.99	315.20	-0.01	0.59
1	4	15	25.15	22.75	-8.64	21.05	112.31	2.40	0.64
1	6	15	38.09	39.10	-10.71	37.60	105.90	-1.01	0.55
1	8	15	36.27	30.86	-30.69	-3.20	185.96	5.41	0.59
1	3	16	37.21	37.35	-37.17	3.70	174.31	-0.14	0.59
1	5	16	41.30	39.82	15.34	-36.74	292.66	1.48	0.58
1	7	16	81.55	80.46	-72.32	-35.27	206.00	1.08	0.49
1	2	17	60.92	53.07	28.83	-44.56	302.91	7.85	0.52
1	4	17	45.59	41.85	3.79	-41.67	275.19	3.74	0.58
1	2	3	149.49	151.62	-41.73	-145.76	254.02	-2.13	0.16
2	2	4	108.16	102.37	99.35	24.68	13.95	5.79	0.20
2	2	6	129.42	129.40	54.67	117.29	65.01	0.02	0.23
2	2	8	84.63	85.31	-28.39	80.45	109.44	-0.68	0.27
2	2	10	47.17	46.72	8.72	-45.90	280.76	0.44	0.34
2	2	12	82.63	81.68	51.65	63.28	50.78	0.95	0.32
2	2	14	20.94	18.54	17.36	6.51	20.55	2.40	0.66
2	2	16	21.54	23.49	-23.32	2.75	173.27	-1.95	0.86
2	1	3	73.24	75.66	-14.50	74.26	101.05	-2.43	0.16
2	3	3	198.18	195.81	-56.55	187.46	106.79	2.37	0.17
3	2	5	28.88	28.58	26.68	-10.24	339.00	0.30	0.31
3	2	7	83.68	83.37	-10.20	-82.74	262.97	0.31	0.26
3	2	9	83.99	80.56	48.01	-64.68	306.59	3.44	0.29
3	2	11	19.80	20.37	-14.37	-14.44	225.14	-0.57	0.58
3	2	13	27.88	26.73	-17.23	-20.44	229.88	1.14	0.52
3	2	15	25.44	24.69	4.07	24.35	80.51	0.75	0.64
3	2	17	21.07	23.77	11.47	20.82	61.15	-2.70	0.97
2	4	4	43.50	48.55	-26.05	40.97	122.46	-5.05	0.23
4	2	6	21.18	21.12	16.52	13.17	38.55	0.06	0.37
4	2	8	27.19	24.95	20.89	-13.63	326.87	2.25	0.41
4	2	10	72.16	71.09	-23.02	-67.26	251.11	1.07	0.32
4	2	12	18.42	19.74	5.81	-18.87	287.10	-1.32	0.68
4	2	16	49.12	43.90	20.05	39.05	62.83	5.22	0.52
2	3	5	110.09	109.14	9.39	-108.74	274.93	0.94	0.22
2	5	5	31.14	38.09	36.18	11.92	18.24	-6.95	0.31
5	2	7	89.55	94.75	-33.27	88.72	110.55	-5.20	0.26

5	2	9	39.25	39.70	-5.04	39.38	97.30	-0.45	0.38
5	2	11	49.61	48.37	27.66	39.68	55.11	1.23	0.39
5	2	13	37.89	36.02	34.97	-8.62	346.15	1.87	0.46
5	2	15	28.95	27.45	-16.49	-21.95	233.09	1.50	0.60
5	2	17	17.37	15.62	-9.61	-12.31	232.02	1.76	1.04
2	4	6	117.47	117.54	-46.13	-108.11	246.89	-0.08	0.22
2	6	6	7.96	8.58	6.78	5.25	37.76	-0.62	0.95
6	2	8	66.12	66.13	58.94	-30.00	333.02	-0.01	0.29
6	2	10	184.73	183.95	9.65	183.70	86.99	0.78	0.32
6	2	12	44.93	47.83	-44.11	-18.50	202.75	-2.90	0.44
6	2	14	8.41	11.96	-5.62	-10.56	241.95	-3.55	1.64
6	2	16	56.66	55.23	16.43	-52.73	287.30	1.43	0.52
2	3	7	35.36	34.02	32.16	-11.11	340.94	1.34	0.31
2	5	7	98.82	104.23	-23.54	101.53	103.06	-5.41	0.26
2	7	7	83.79	84.32	-8.42	83.90	95.73	-0.54	0.28
7	2	9	63.37	64.67	-55.28	-33.55	211.25	-1.30	0.32
7	2	11	57.51	58.34	56.61	-14.11	346.01	-0.83	0.42
7	2	13	26.50	26.58	17.25	20.22	49.53	-0.08	0.62
7	2	15	19.99	21.88	-5.57	21.16	104.76	-1.89	0.85
2	4	8	52.98	55.72	-9.12	54.97	99.42	-2.73	0.30
2	6	8	13.18	11.81	11.80	-0.38	358.16	1.38	0.70
2	8	8	55.33	54.60	46.69	-28.30	328.77	0.73	0.34
8	2	10	39.88	42.72	31.07	-29.31	316.67	-2.84	0.42
8	2	12	59.45	59.32	-50.64	-30.88	211.37	0.13	0.43
8	2	14	17.71	16.09	16.08	0.63	2.26	1.62	0.92
2	3	9	71.66	72.40	42.51	-58.60	305.96	-0.74	0.29
2	5	9	37.91	38.27	-9.48	37.08	104.34	-0.37	0.38
2	7	9	33.33	33.84	-14.91	-30.38	243.86	-0.51	0.42
2	9	9	36.13	36.86	-35.97	-8.08	192.66	-0.73	0.45
9	2	11	13.65	10.86	10.39	-3.15	343.16	2.79	0.95
9	2	13	15.85	17.67	11.72	-13.23	311.53	-1.82	0.99
9	2	15	23.93	25.07	-17.46	18.00	134.12	-1.14	0.79
2	4	10	37.58	38.44	-12.14	-36.47	251.59	-0.86	0.38
2	6	10	23.36	21.60	-3.19	21.36	98.50	1.76	0.56
2	8	10	53.32	49.29	9.26	48.41	79.18	4.03	0.37
2	10	10	46.76	46.77	16.34	43.82	69.54	-0.00	0.43
10	2	12	49.77	46.84	20.96	41.90	63.42	2.92	0.45
10	2	14	12.96	11.06	-2.77	-10.71	255.52	1.90	1.25
2	3	11	58.37	57.68	-23.78	-52.55	245.65	0.69	0.34
2	5	11	53.13	52.71	18.24	49.45	69.76	0.42	0.38
2	7	11	14.38	10.94	8.34	7.09	40.38	3.44	0.87
2	9	11	43.30	41.41	30.08	28.47	43.42	1.89	0.43
2	11	11	48.17	45.45	-41.34	18.90	155.43	2.71	0.48
2	4	12	56.85	58.08	24.54	52.64	65.00	-1.23	0.37
2	6	12	15.44	11.58	4.27	10.76	68.35	3.86	0.81
2	8	12	48.46	46.32	-44.52	-12.81	196.05	2.13	0.45
2	10	12	20.24	19.94	-12.74	-15.34	230.30	0.30	0.74
2	12	12	48.67	46.18	46.17	-0.77	359.04	2.49	0.49
2	3	13	78.75	77.30	-48.82	59.93	129.16	1.45	0.36
2	5	13	8.07	11.00	-2.34	-10.74	257.73	-2.93	1.54
2	7	13	18.00	19.02	17.49	7.48	23.15	-1.02	0.82
2	9	13	50.43	53.34	42.07	-32.79	322.07	-2.91	0.49
2	11	13	31.96	32.13	-15.40	-28.20	241.37	-0.17	0.60
2	4	14	68.04	65.09	49.04	-42.80	318.89	2.95	0.39
2	6	14	15.02	16.21	-7.28	-14.48	243.33	-1.19	0.93
2	8	14	30.39	28.15	-23.46	-15.56	213.55	2.23	0.60
2	10	14	67.07	61.99	-5.80	-61.72	95.37	5.08	0.49
2	3	15	20.01	24.06	5.99	-23.31	284.41	-4.05	0.75
2	5	15	42.42	41.48	-28.88	-29.77	225.86	0.94	0.50
2	7	15	54.97	53.05	39.31	35.61	42.17	1.92	0.48

2	9	15	41.32	38.46	-18.73	33.58	119.15	2.86	0.58
2	4	16	37.40	33.80	20.72	26.70	52.18	3.60	0.60
2	6	16	10.29	6.55	-2.16	6.18	109.27	3.75	1.76
2	3	17	68.91	65.80	30.29	58.42	62.59	3.10	0.51
3	3	4	48.80	52.88	51.16	-13.37	345.35	-4.07	0.22
3	3	6	43.60	48.42	36.62	-31.69	319.13	-4.82	0.29
3	3	8	35.99	41.07	-29.36	-28.71	224.35	-5.08	0.34
3	3	10	180.16	179.00	-6.80	178.87	92.18	1.16	0.29
3	3	12	30.26	30.41	-18.70	-23.98	232.05	-0.15	0.49
3	3	14	32.34	32.52	-3.45	-32.33	263.91	-0.18	0.52
3	3	16	76.00	72.32	-20.15	-69.45	253.82	3.68	0.46
4	3	5	43.00	42.20	-36.86	20.55	150.86	0.80	0.26
4	3	7	60.34	62.91	-57.26	26.05	155.53	-2.57	0.29
4	3	9	21.48	21.77	-20.09	-8.39	202.66	-0.29	0.51
4	3	11	18.31	16.69	13.11	-10.33	321.76	1.62	0.66
4	3	13	41.52	43.18	26.39	34.18	52.33	-1.66	0.44
4	3	15	16.68	17.35	-17.25	1.86	173.85	-0.67	0.88
4	3	17	27.91	24.96	-7.16	-23.91	253.32	2.95	0.75
3	4	5	67.01	67.46	-27.92	61.42	114.45	-0.45	0.23
5	3	6	66.60	68.68	-19.34	-65.90	253.65	-2.08	0.26
5	3	8	43.41	45.66	-5.95	45.27	97.49	-2.25	0.35
5	3	10	81.82	86.36	9.00	-85.89	275.98	-4.54	0.34
5	3	12	20.03	20.76	-12.09	16.88	125.61	-0.73	0.66
5	3	14	16.95	16.34	9.74	-13.12	306.58	0.60	0.85
5	3	16	49.38	44.12	-7.66	43.46	99.99	5.26	0.53
3	5	6	54.34	59.31	27.09	52.76	62.82	-4.97	0.27
6	3	7	34.03	39.11	8.16	-38.25	282.04	-5.08	0.35
6	3	9	46.79	48.72	-22.26	-43.35	242.82	-1.94	0.35
6	3	11	33.59	32.52	-2.75	-32.40	265.15	1.07	0.49
6	3	13	19.30	17.86	-13.33	-11.89	221.73	1.44	0.75
6	3	15	43.42	39.38	-20.00	33.92	120.52	4.04	0.51
3	4	7	76.79	77.62	-75.22	19.19	165.69	-0.84	0.28
3	6	7	62.76	64.60	35.93	-53.69	303.79	-1.84	0.28
7	3	8	57.79	60.94	38.73	47.05	50.54	-3.15	0.32
7	3	10	93.58	97.57	-1.77	-97.55	268.96	-3.99	0.32
7	3	12	46.59	46.44	-37.35	27.59	143.55	0.15	0.45
7	3	14	24.27	25.50	-23.99	-8.65	199.83	-1.23	0.67
7	3	16	39.65	35.80	29.27	20.62	35.16	3.85	0.59
3	5	8	9.59	11.16	8.91	6.72	37.02	-1.57	0.95
3	7	8	22.86	19.36	-16.27	10.49	147.18	3.51	0.49
8	3	9	64.16	63.24	-1.68	63.21	91.52	0.92	0.35
8	3	11	53.42	54.38	22.48	49.52	65.59	-0.96	0.39
8	3	13	18.33	23.40	6.62	-22.45	286.43	-5.08	0.84
8	3	15	29.35	31.02	13.45	-27.95	295.70	-1.67	0.67
3	4	9	31.55	35.20	-25.51	-24.25	223.55	-3.65	0.39
3	6	9	74.77	76.22	-46.29	60.55	127.40	-1.45	0.30
3	8	9	9.15	5.95	-3.44	-4.85	234.70	3.20	1.17
9	3	10	32.11	29.68	-10.66	-27.70	248.94	2.44	0.49
9	3	12	26.62	22.97	2.58	-22.82	276.46	3.66	0.59
9	3	14	41.20	45.18	2.22	45.12	87.19	-3.97	0.55
3	5	10	95.66	101.32	-10.26	-100.80	264.19	-5.66	0.34
3	7	10	55.15	57.24	9.14	-56.51	279.19	-2.09	0.36
3	9	10	21.53	20.82	-13.31	-16.01	230.25	0.71	0.63
10	3	13	14.28	14.20	11.76	7.96	34.09	0.08	1.04
3	4	11	36.76	36.35	36.14	-3.84	353.94	0.41	0.42
3	6	11	39.95	39.97	24.06	31.93	53.00	-0.03	0.44
3	8	11	24.28	23.85	7.09	-22.77	287.30	0.43	0.57
3	10	11	8.24	1.63	-0.92	-1.35	235.66	6.61	1.52
11	3	12	24.56	27.67	-9.61	-25.95	249.68	-3.11	0.66
3	5	12	65.68	64.35	-34.07	-54.60	238.04	1.33	0.38

3	7	12	35.61	32.41	27.64	-16.92	328.53	3.20	0.49
3	9	12	21.72	23.11	-3.82	22.79	99.51	-1.39	0.67
3	11	12	8.69	4.62	0.33	4.60	85.91	4.08	1.74
3	4	13	18.66	14.24	13.32	-5.05	339.22	4.42	0.71
3	6	13	30.61	26.20	-24.81	8.40	161.29	4.41	0.55
3	8	13	46.33	42.27	-32.46	27.08	140.17	4.06	0.49
3	10	13	17.42	18.13	17.65	4.14	13.19	-0.71	0.87
3	5	14	53.90	56.35	-18.00	53.40	108.63	-2.45	0.44
3	7	14	14.03	16.78	-15.71	-5.91	200.63	-2.75	1.03
3	9	14	18.79	14.96	-5.27	-14.00	249.36	3.83	0.93
3	4	15	32.39	34.48	-9.10	33.26	105.31	-2.09	0.56
3	6	15	50.20	49.56	8.51	-48.83	279.88	0.64	0.49
3	8	15	12.28	14.50	14.35	2.06	8.17	-2.22	1.29
3	5	16	39.36	36.21	10.27	34.73	73.53	3.14	0.58
3	7	16	47.41	43.01	22.61	36.58	58.28	4.40	0.56
3	4	17	52.89	49.33	-21.99	-44.15	243.53	3.56	0.55
4	4	4	183.84	184.23	-183.21	-19.37	186.04	-0.38	0.21
4	4	6	68.58	69.47	43.81	-53.92	309.10	-0.89	0.26
4	4	8	166.25	170.33	170.32	-1.98	359.33	-4.08	0.29
4	4	10	16.06	15.57	15.06	3.96	14.74	0.49	0.68
4	4	12	39.65	37.39	-37.08	4.84	172.56	2.25	0.44
4	4	14	51.21	49.52	-40.94	-27.87	214.24	1.68	0.44
4	4	16	51.47	48.91	46.39	15.48	18.45	2.57	0.52
4	5	5	38.52	37.77	32.55	-19.15	329.52	0.75	0.29
5	4	7	41.01	45.13	44.30	8.62	11.01	-4.13	0.32
5	4	9	30.00	29.39	8.79	-28.04	287.40	0.62	0.44
5	4	11	17.03	17.19	-12.75	11.52	137.89	-0.16	0.72
5	4	13	48.48	47.44	-42.96	20.12	154.91	-1.04	0.43
5	4	15	19.55	22.60	19.59	-11.27	330.08	-3.05	0.82
4	6	6	63.47	62.63	-21.32	58.88	109.90	0.85	0.28
6	4	8	59.90	62.17	-35.31	-51.17	235.39	-2.27	0.30
6	4	10	64.29	65.31	-3.99	65.18	93.50	-1.02	0.37
6	4	12	90.44	89.03	64.54	-61.33	316.46	1.40	0.38
6	4	14	48.41	50.53	28.63	41.64	55.49	-2.12	0.48
6	4	16	22.91	25.08	-12.01	-22.01	241.38	-2.16	0.84
4	5	7	82.85	84.19	-77.05	-33.91	203.76	-1.34	0.27
4	7	7	45.76	43.88	-43.46	-6.05	187.92	1.88	0.34
7	4	9	61.85	62.39	58.92	-20.53	340.79	-0.54	0.34
7	4	11	32.07	37.59	-37.11	-6.01	189.20	-5.53	0.50
7	4	13	28.15	25.61	22.80	11.66	27.10	2.54	0.59
7	4	15	21.63	19.89	6.96	-18.63	290.49	1.75	0.81
4	6	8	70.22	74.06	37.72	63.73	59.38	-3.84	0.30
4	8	8	92.95	98.24	-97.97	7.19	175.80	-5.28	0.30
8	4	10	14.60	13.84	-8.51	-10.91	232.04	0.76	0.82
8	4	12	44.12	42.01	41.41	-7.11	350.25	2.10	0.43
8	4	14	21.10	20.53	0.86	20.51	87.60	0.57	0.84
4	5	9	46.45	46.85	40.53	-23.49	329.91	-0.40	0.37
4	7	9	115.33	116.71	91.51	-72.43	321.64	-1.37	0.30
4	9	9	12.60	13.15	5.80	11.80	63.84	-0.55	0.89
9	4	11	50.35	53.42	-37.37	38.18	134.38	-3.07	0.42
9	4	13	41.26	40.55	-26.33	-30.83	229.51	0.71	0.50
4	6	10	19.36	19.50	5.90	18.58	72.40	-0.14	0.64
4	8	10	37.62	36.04	-6.49	35.45	100.37	1.58	0.43
4	10	10	79.76	81.60	24.59	-77.80	287.54	-1.84	0.37
10	4	12	22.34	24.20	-12.08	20.97	119.96	-1.86	0.71
10	4	14	14.64	15.48	8.48	12.95	56.79	-0.84	1.15
4	5	11	27.36	30.69	-19.06	24.06	128.39	-3.34	0.51
4	7	11	66.72	72.74	-67.55	-26.96	201.76	-6.01	0.39
4	9	11	42.21	43.70	-16.70	40.38	112.47	-1.48	0.44
4	11	11	46.59	47.72	41.33	23.85	29.99	-1.13	0.48



11	4	13	46.46	49.35	39.46	-29.63	323.10	-2.89	0.49
4	6	12	30.29	29.87	-24.52	-17.05	214.82	0.42	0.52
4	8	12	51.86	50.43	50.42	0.72	0.82	1.43	0.41
4	10	12	31.42	26.85	-0.37	-26.85	269.20	4.57	0.56
4	12	12	54.51	52.09	-51.57	7.37	171.87	2.43	0.46
4	5	13	65.20	65.88	64.07	-15.37	346.51	-0.68	0.41
4	7	13	15.73	14.32	7.96	11.90	56.22	1.41	0.91
4	9	13	20.50	20.72	-20.62	-2.09	185.77	-0.23	0.77
4	6	14	42.43	44.06	30.41	31.88	46.35	-1.63	0.50
4	8	14	58.38	60.87	56.60	-22.38	338.42	-2.49	0.48
4	10	14	38.08	37.31	14.51	34.37	67.11	0.77	0.56
4	5	15	11.85	10.96	-3.75	-10.30	250.00	0.89	1.23
4	7	15	41.50	39.84	-34.25	20.35	149.29	1.66	0.55
4	6	16	33.15	32.74	-27.34	-18.02	213.38	0.40	0.64
5	5	6	31.57	34.60	-32.11	12.89	158.12	-3.03	0.34
5	5	8	77.82	81.11	-62.57	51.62	140.48	-3.29	0.29
5	5	10	33.62	34.30	15.00	30.84	64.06	-0.67	0.44
5	5	12	41.47	39.24	-1.47	39.22	92.15	2.22	0.45
5	5	14	13.89	19.03	-5.97	-18.07	251.72	-5.14	1.08
5	5	16	42.22	41.73	-39.47	-13.56	198.96	0.49	0.58
6	5	7	49.59	50.74	50.54	-4.52	354.88	-1.14	0.31
6	5	9	42.82	43.73	13.88	41.47	71.50	-0.91	0.37
6	5	11	20.04	17.19	-8.48	14.95	119.56	2.86	0.65
6	5	13	49.08	47.89	-43.47	-20.09	204.81	1.20	0.45
6	5	15	10.57	15.49	15.42	1.44	5.33	-4.92	1.42
5	6	7	43.05	44.22	43.45	8.25	10.75	-1.18	0.32
7	5	8	25.38	25.67	-17.34	18.92	132.51	-0.28	0.48
7	5	10	46.67	47.84	-26.69	39.71	123.90	-1.17	0.38
7	5	12	14.69	15.34	6.63	13.83	64.40	-0.64	0.93
7	5	14	31.79	31.16	-1.00	-31.15	268.16	0.63	0.58
5	7	8	56.04	57.16	54.58	-17.00	342.70	-1.13	0.34
8	5	9	49.43	51.90	-26.01	-44.91	239.92	-2.47	0.37
8	5	11	23.87	24.88	10.68	-22.47	295.42	-1.01	0.58
8	5	13	51.25	50.11	-40.24	29.86	143.42	1.15	0.48
8	5	15	44.99	46.33	43.21	16.71	21.15	-1.35	0.55
5	6	9	53.31	56.84	-53.24	-19.92	200.52	-3.53	0.35
5	8	9	33.07	32.86	-14.20	-29.63	244.39	0.21	0.44
9	5	10	39.81	39.17	5.95	38.71	81.26	0.64	0.44
9	5	12	52.07	51.49	38.45	-34.24	318.32	0.58	0.43
9	5	14	19.64	16.57	16.22	-3.39	348.18	3.06	0.87
5	7	10	86.47	87.07	-17.43	85.30	101.55	-0.60	0.34
5	9	10	22.28	21.57	-14.98	15.53	133.96	0.71	0.62
10	5	11	11.46	14.33	-14.29	1.12	175.52	-2.88	1.31
10	5	13	25.80	20.79	-4.66	20.27	102.94	5.01	0.70
5	6	11	56.99	58.67	57.32	-12.51	347.68	-1.68	0.41
5	8	11	13.25	12.83	11.28	-6.11	331.57	0.43	0.95
5	10	11	52.11	50.16	-20.88	45.61	114.60	1.95	0.44
11	5	12	13.20	12.66	-7.67	-10.07	232.72	0.53	1.15
5	7	12	10.89	7.66	-5.17	5.66	132.39	3.22	1.18
5	9	12	36.61	34.68	14.68	-31.42	295.04	1.92	0.50
5	11	12	15.48	12.33	-0.03	-12.33	269.87	3.15	1.00
5	6	13	31.34	30.75	-30.15	-6.03	191.30	0.59	0.56
5	8	13	23.82	19.12	-1.79	19.04	95.37	4.70	0.72
5	10	13	30.41	34.71	5.72	-34.24	279.48	-4.30	0.59
5	7	14	32.66	35.77	-23.77	-26.72	228.34	-3.11	0.58
5	9	14	28.32	29.80	-20.36	21.75	133.11	-1.48	0.68
5	6	15	9.16	11.08	11.06	0.69	3.57	-1.92	1.62
5	8	15	26.46	27.53	20.05	18.86	43.25	-1.07	0.74
6	6	6	83.31	88.54	-11.77	-87.76	262.36	-5.23	0.28
6	6	8	80.57	80.68	47.85	-64.96	306.37	-0.11	0.30

6	6	10	123.48	124.48	11.23	-123.97	275.17	-1.00	0.31
6	6	12	36.78	34.00	-32.88	-8.65	194.73	2.78	0.50
6	6	14	34.85	35.76	1.88	35.71	86.99	-0.91	0.56
6	7	7	74.49	76.84	-74.61	18.38	166.16	-2.35	0.30
7	6	9	11.41	10.08	7.47	-6.76	317.87	-1.33	0.96
7	6	11	32.53	33.88	-18.02	28.69	122.12	-1.35	0.49
7	6	13	54.05	54.34	54.33	1.15	1.21	-0.29	0.46
7	6	15	34.34	33.50	-28.73	-17.23	210.95	0.84	0.62
6	8	8	70.43	71.69	6.89	71.36	84.49	-1.26	0.34
8	6	10	68.88	69.68	-3.00	69.61	92.47	-0.79	0.36
8	6	12	14.88	16.14	12.65	10.02	38.39	-1.26	0.92
8	6	14	44.12	43.58	-24.64	-35.94	235.57	0.54	0.53
6	7	9	45.76	48.82	-36.71	32.19	138.76	-3.06	0.38
6	9	9	53.82	54.96	36.70	-40.91	311.90	-1.14	0.38
9	6	11	58.18	55.42	-20.68	-51.42	248.09	2.76	0.43
9	6	13	37.98	42.33	19.42	37.61	62.69	-4.35	0.52
6	8	10	23.79	24.81	-4.62	-24.38	259.27	-1.02	0.58
6	10	10	31.13	36.06	8.50	35.05	76.37	-4.94	0.52
10	6	12	28.63	34.00	9.96	32.51	72.97	-5.37	0.60
6	7	11	29.28	30.37	18.74	23.90	51.91	-1.09	0.51
6	9	11	69.87	66.46	-6.55	-66.14	264.34	3.41	0.41
6	11	11	83.60	84.51	9.58	-83.97	276.51	-0.91	0.43
6	8	12	25.03	25.92	-12.57	22.67	119.02	-0.88	0.63
6	10	12	52.37	55.95	8.48	55.31	81.28	-3.59	0.45
6	7	13	57.72	56.53	55.63	-10.00	349.81	1.19	0.45
6	9	13	24.57	28.85	0.50	28.85	89.00	-4.28	0.67
6	8	14	38.31	32.74	-18.49	-27.02	235.61	5.57	0.56
6	7	15	21.03	19.13	-15.86	-10.70	214.01	1.90	0.84
7	7	8	44.85	48.89	35.42	-33.70	316.43	-4.05	0.38
7	7	10	25.12	24.91	15.38	19.59	51.86	0.21	0.55
7	7	12	34.98	37.46	-37.32	-3.19	184.88	-2.48	0.50
7	7	14	18.20	13.29	12.74	3.78	16.50	-4.91	0.89
8	7	9	60.90	63.14	-57.37	-26.39	204.70	-2.25	0.37
8	7	11	64.87	65.50	65.50	0.23	0.20	-0.63	0.41
8	7	13	18.95	18.97	-18.68	-3.31	190.04	-0.01	0.81
7	8	9	14.82	12.81	12.80	0.43	1.94	2.01	0.79
9	7	10	27.65	27.37	-16.99	-21.46	231.64	0.27	0.56
9	7	12	50.44	48.43	-43.17	-21.94	206.94	2.01	0.45
7	9	10	-18.83	20.63	-12.12	16.70	125.97	-1.81	0.74
10	7	11	30.35	26.54	14.19	22.43	57.69	3.81	0.57
10	7	13	12.14	14.80	1.89	-14.68	277.33	-2.66	1.27
7	8	11	30.50	26.64	-22.72	13.89	148.56	3.87	0.55
7	10	11	24.18	22.78	10.76	20.07	61.80	1.40	0.68
11	7	12	18.26	16.72	16.57	-2.19	352.47	1.54	0.89
7	9	12	49.78	48.96	40.90	-26.91	326.66	0.82	0.45
7	11	12	59.66	59.04	-56.80	-16.13	195.85	0.61	0.46
7	8	13	28.64	30.46	-27.35	-13.41	206.13	-1.81	0.63
7	10	13	14.35	17.19	-14.09	-9.85	214.97	-2.84	1.10
8	8	8	39.54	37.53	28.39	24.54	40.84	2.02	0.41
8	8	10	15.04	19.91	18.33	-7.76	337.05	-4.87	0.87
8	9	9	26.04	28.73	12.15	26.04	64.99	-2.69	0.57
9	8	11	15.95	17.83	1.10	17.79	86.45	-1.88	0.96
9	8	13	32.94	34.73	34.70	-1.48	357.55	-1.79	0.57
8	10	10	24.78	30.25	-11.33	-28.05	248.01	-5.47	0.64
10	8	12	18.45	17.47	-6.75	-16.11	247.26	0.98	0.86
8	9	11	45.88	44.11	-23.85	37.10	122.74	1.77	0.48
8	11	11	21.23	14.86	8.22	12.37	56.40	6.37	0.78
8	10	12	29.77	29.31	4.86	-28.90	279.55	0.46	0.62
8	9	13	24.59	21.48	-20.90	4.96	166.64	3.11	0.73
9	9	10	42.03	36.90	9.65	-35.62	285.16	5.12	0.46

9	10	11	41.16	41.38	6.50	-40.87	279.03	-0.22	0.52
10	10	10	141.06	140.77	-21.59	139.11	98.82	0.29	0.39